

Amendment and Response Under 37 C.F.R. §1.116

Serial No.: 09/345,335

Confirmation No.: 1129

Filed: July 1, 1999

For: PROCESS VARIABLE GENERALIZED GRAPHICAL DEVICE DISPLAY AND METHODS REGARDING SAME

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Remarks

The Final Office Action mailed January 14, 2004 has been received and reviewed. No claims have been cancelled or amended. Therefore, claims 1, 3-5, 7-21, 23-25, and 27-51 are pending in the present application. Reconsideration and withdrawal of the rejections are respectfully requested in view of the following remarks.

Drawings

Applicants continue to respectfully request consideration and approval of amended Figures 3 and 11 submitted with Applicants' response to the 7 November 2001 Office Action.

The 35 U.S.C. §103 Rejection**Claims 1, 3-5, 7-13, 15-17, 19, 21, 23-25, 27-33, 35-38, 40-41, and 43-51**

The Examiner continues to reject claims 1, 3-5, 7-13, 15-17, 19, 21, 23-25, 27-33, 35-38, 40-41 and 43-51 under 35 U.S.C. §103(a) as being unpatentable over Michener et al. (U.S. Patent No. 4,745,543) (hereinafter "Michener") in view of Harrow et al. (U.S. Patent No. 5,375,199) (hereinafter "Harrow"). Applicants respectfully traverse the rejection of the claims (both previous rejections and this final rejection) and respectfully submit that the remarks provided in response to the previous Office Action clearly set forth the patentability of such claims over the references cited. However, to further supplement and highlight particular elements of the pending claims which are clearly missing in the references cited, the following remarks are provided.

In each of independent claims 1, 21, 40, 43, 47, and 51, Applicants teach a computer implemented graphical user display and/or method for providing real-time process information to a user for a process that is operable under control of one or more process variables. The one or more process variables include high and low process limit values associated therewith. The graphical user display includes one or more graphical devices, where each graphical device

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corresponds to a process variable. The graphical device for a corresponding process variable includes a display of a gauge axis and a first and second pair of high and low elements. The first pair of high and low limit elements are representative of engineering hard high and low limit values for the corresponding process variable that define a range in which operator set high and low limit values are set. The second pair of high and low limit elements are representative of the operator set high and low limit values for the corresponding process variable which define a range in which the process is free to operate. The first and second pair of high and low limit elements are displayed on the gauge axis. A graphical shape is displayed along the gauge axis representative of a value of the corresponding process variable relative to the process limit values.

In the Examiner's response to arguments, the Examiner continues to assert that Applicants rely on features not recited in the claims. It is believed that this assertion is the result of the inclusion in the Applicants previous response of the following description given in the specification for various "limit" terms:

As used herein, engineering physical limit values refer to limit values that define the physical limits of a piece of equipment or instrumentation. They represent the widest possible range of meaningful quantification of a process variable. For example, there may be engineering physical limits to measurements that a sensor may be able to provide.

As used herein, engineering hard limit values are those limit values set by a user, particularly a control engineer, to establish a range over which an operator or another user can safely set operator set limit values.

As used herein, operator set limit values are limit values through which operators exert influence on the controller 14. Such limits establish the range in which the control solution is free to act when it is afforded sufficient degrees of freedom.

Lastly, as used herein, optimization soft limits, or otherwise referred to herein as delta soft bands, are pseudo limits describing an offset within the operator set limits that the optimization calculations will attempt to respect.

Inclusion of such material was meant to provide for a clearer understanding of the limitations. However, any portion of such description necessary to overcome the cited references has been included in the claims.

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To establish a *prima facie* case of obviousness, the prior art references must teach or suggest all the claim limitations. Applicants respectfully submit that Michener fails to teach or suggest all the claim limitations of the independent claims 1, 21, 40, 43, 47, and 51; and further that Harrow does nothing to correct for such deficiency. For example, contrary to the Examiner's position, Michener fails to teach or suggest **displaying a first pair of high and low limit elements representative of engineering hard high and low limit values for the corresponding process variable that define a range in which operator set high and low limit values are set and fail to teach or suggest a second pair of high and low limit elements representative of operator set high and low limit values for the corresponding process variable which define a range in which the process is free to operate, as recited in each of such claims.**

The Examiner in the response to Applicants' arguments continues to assert that Michener teaches "a first pair of high and low limit values (controlled variables) for the corresponding process variable (figure 2, (0-100), column 47-63) that define a range in which operator set high and low limit values are set (figure 2); a second pair of high and low limit elements representative of operator set high and low limit values elements (manipulated variables) (figure 2, (S3, S4), column 5, lines 56-65)".

First, some general errors in this statement must be noted. The Examiner is for some reason equating "a first pair of high and low limit values" with "(controlled variables)" and also "a second pair of high and low limit elements representative of operator set high and low limit values elements" with "(manipulated variables)". This is incorrect, in that each type of variable (whether controlled or manipulated variable) may be associated with both a first pair of high and low limit elements and a second pair of high and low limit elements.

Further, with respect to "a first pair of high and low limit values (controlled variables) for the corresponding process variable being shown at "figure 2, (0-100), column 47-63)" of

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Michener, such a first pair of high and low limit values is not shown, described or taught as alleged by the Examiner at this location or any other location in Michener.

It appears that the Examiner equates the display of the first pair of high and low limit elements representative of engineering hard high and low limit values for the corresponding process variable (e.g., those that define a range in which operator set high and low limit values are set) to scale of 0-100 in Michener. The values 0 and 100 on the scale have in no manner been described by Michener, and it is not taught or suggested by Michener, that such values are engineering hard limit values that establish a range over which an operator or another user can safely set operator set limit values (e.g., engineering hard limit values set by a user, particularly a control engineer). The 0 and 100 are merely part of a 0-100% scale and are not functional limit values. They are not indicated as being a limit on anything, upper or lower, for the process variable.

Even if for some reason (e.g., a reason that is clearly beyond the comprehension of Applicants) the scale of 0-100 in Michener could be equated with a first pair of high and low limit elements representative of engineering hard high and low limit values for the corresponding process variable, the "0" and "100" values of Michener are not values that establish a range over which an operator or another user can safely set operator set limit values because such operator set limit values do not exist in Michener.

With respect to a second pair of high and low limit elements representative of operator set high and low limit values elements, the Examiner states that such a second pair of high and low limit elements is shown at "(figure 2, (S3, S4), column 5, lines 56-65)" of Michener. Such a second pair of high and low limit elements is not shown, described or taught at this location or any other location in Michener.

First, the Examiner must look at the entire statement recited in the claims for the second pair of high and low limit elements. The Examiner must show a second pair of high and low limit elements that are representative of the operator set high and low limit values for the

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corresponding process variable which define a range in which the process is free to operate and not just "a second pair of high and low limit elements representative of operator set high and low limit values." In other words, the operator set high and low limit values for the corresponding process variable must define a range in which the process is free to operate.

The Examiner equates the switches S3 and S4 as described in column 6 of Michener to the second pair of high and low limit elements described in the pending claims. Switches S3 and S4 do not describe high and low limit elements that are displayed on a gauge axis as described in the pending claims. The switches S3 and S4 carry out control functions as described in Michener (e.g., the switches are used to control the single set point). For example, operation of one of the switches causes an increase in the set point while the other causes a decrease in the set point. Although the single set point value indicated by the bar graph may get increased or decreased, this in no manner can be construed to be a display of operator set high and low limit values for a corresponding process variable which **define a range in which the process is free to operate**. Rather, the set point is a single value that the operator wants the process to achieve.

The second pair of high and low limit elements according to the present invention are representative of the operator set high and low limit values for the corresponding process variable which define a range in which the process is free to operate and do not necessarily even provide a set point. Rather, the second pair of high and low limit elements are a pair of limits (i.e., two limits) that define a range (e.g., which if dragged to a same value may indicate a set point, but which are clearly to define a range in which the process is free operate) (see pages 32 and 33 of specification of pending application). Michener merely describes a couple of switches that are used to control a single set point (i.e., operation of one of the switches causes an increase in the set point while the other causes a decrease in the set point). There are not two limit elements representative of operator set high and low limit values described in Michener.

Harrow does nothing to cure the lack of such elements in Michener. Therefore, for at least the reasons set forth above, the cited references do not show all the claim elements and, as

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such, the pending independent claims 1, 21, 40, 43, 47, and 51 are not obvious in view of the cited references.

With respect to claims 3-5, 7-13, 15-17, 19, 23-25, 27-33, 35-38, 41, 44-46, and 48-50, Applicants respectfully submit that these claims are also patentable as further limitations of respective patentable base independent claims from which they directly or indirectly depend. Furthermore, such claims are each patentable over Michener and Harrow based on the subject matter recited respectively therein and Applicant generally traverses the allegations that such claims are obvious over the cited references. For example, certain limited remarks are further provided below in response to certain statements provided by the Examiner in the Examiner's response to Applicants' arguments.

For claims 7 and 27, the Examiner asserts Michener demonstrates the claimed elements. Applicants respectfully traverse these assertions. There is nothing in Michener that would show the graphical shape positioned adjacent one of the pair of high and low limit elements when the value for the corresponding process variable is within a certain range of the engineering hard high/low limits. The Examiner points to Figure 2 as showing such limitations. It is requested that the portions of Figure 2 that show such a limitation be provided to Applicant so that Applicant can properly respond.

For claims 8 and 28, the Examiner asserts that Michener and Harrow demonstrate the subject matter recited in claims 8 and 28. Applicants respectfully traverse these assertions. Claims 8 and 28 state in part that the graphical shape is positioned outside of the parallel lines of the second pair of high and low limit elements when the value for the corresponding process variable is outside the operator set high and low process limit values by a predetermined percentage. As Michener and Harrow fail to teach or suggest a pair of high and low elements representative of operator set high and low process limit values, the other limitations of this claim cannot be met.

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For claims 10, 11, 30, 31, 44-45, and 48-49, the Examiner states that the "100" value of Michener is the maximum value. Applicants fail to see how this shows a graphical symbol representative of a corresponding process variable to be maximized, let alone a graphical symbol representative of a corresponding process variable to be minimized. It merely is a 100% value for a process and refers to nothing concerning a process variable to be optimized as is clearly presented in the claims.

For claims 12, 32, 46, and 50, the Examiner cites language in Michener that discusses a set point. A set point of the process and a resting value for one particular variable are not equivalent.

For claims 13 and 33, the Examiner alleges that Michener shows the symbol representative of a corresponding process variable being constrained to a set point. Applicant respectfully traverses such assertions and in response asserts that no such graphical symbol provides a representation of such constraint, but merely provides a set point.

For claims 15 and 35, Applicants respectfully traverse the Examiner's allegations using Official Notice to assert that use of a circle positioned along the gauge axis is obvious. Michener uses a bar and there is no teaching or motivation in the references to substitute a circle for the bar.

For claims 19 and 41, the Examiner continues to assert that Harrow et al. discloses a matrix display having the manipulated variables displayed along a first axis thereof and the controlled variables displayed along a second axis thereof, wherein each of the manipulated and controlled variables includes a graphical device displayed in proximity thereto. Applicants respectfully traverse the rejection.

The Figure 11A of Harrow cited by the Examiner merely shows a graph for one variable, "CRC Errors". In other words, Harrow teaches a "graphic display of data" having Cartesian coordinates defining an independent axis "CRC Errors" and a dependent axis "Time" on which a graphical indication of the CRC errors per hour are plotted (Col. 18, lines 16-32).

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For claim 36, the Examiner asserts that Michener, describes the color limitations described therein. Applicants respectfully traverse the rejection and submit that Michener at column 4, lines 50-60 does not teach or suggest displaying the graphical shape in one of a set of colors that reflects the state of the variable. Michener merely describes the use of a neon orange color for display of digits, and nothing more.

For claim 38, the Examiner asserts that Harrow describes such limitations. Applicants respectfully traverse the rejection and submit that the citations of Harrow recited by the Examiner do not teach or suggest displaying a matrix display having manipulated variables displayed along a first axis of the matrix and the controlled variables displayed along a second axis of the matrix.

Based on at least the forgoing reasons, the Office Action fails to establish a *prima facie* case of obviousness for the rejection of the pending claims 1, 3-5, 7-13, 15-17, 19, 21, 23-25, 27-33, and 35-38, 40-41, and 43-51. Applicants respectfully request reconsideration and allowance of such claims.

Claims 18, 20, 39, and 42

The Office Action rejected claims 18, 20, 39, and 42 under 35 U.S.C. §103(a) as unpatentable over Michener in view of Harrow and further in view of U.S. Patent No. 5,631,825 to van Weele *et al.* (hereinafter "van Weele"). Applicants respectfully traverse the rejection of each of the claims.

For claims 18, 20, 39, and 42, Applicants respectfully traverse the rejections and repeat the arguments presented above given for the independent claims from which these claims directly or indirectly depend. Such claims are also allowable in view of their own limitations.

Applicants respectfully request reconsideration and allowance of claims 18, 20, 39, and 42.

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Allowable Subject Matter

Applicants acknowledge the Examiner's indication that claims 14 and 34 are objected to as being dependent on a rejected base claim, but that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, Applicants have not rewritten the claims in independent form as it is believed that the claims upon which they depend are also in allowable condition. However, Applicants reserve the right to rewrite such claims at a later date.

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Summary and Request for Examiner Interview Prior to Disposition of Case

It is respectfully submitted that the pending claims are in condition for allowance and notification to that effect is respectfully requested. It would appear that the Examiner is still unclear as to the limitations of the present invention and does not recognize the differences between Applicants' invention and the cited references. It is requested that the Examiner contact Applicants' Representatives at the below-listed telephone number if the case is not allowed to discuss the prosecution of this application when it is taken up for consideration.

Respectfully submitted for

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CERTIFICATE UNDER 37 CFR §1.8:

The undersigned hereby certifies that the Transmittal Letter and the paper(s), as described hereinabove, are being transmitted by facsimile in accordance with 37 CFR §1.6(d) to the Patent and Trademark Office, addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this

15 day of March, at 1:35 pm (Central Time).By: Name: Sandra J. Truehart